

What is claimed is:

1. An interface device for use with a high frequency ultrasound imaging system having a scan head with at least one transducer, the interface device being removably attachable to the scan head, the interface device comprising:
 - a reservoir with a proximal end and a distal end, said proximal end being open and shaped to allow the transducer to transverse across an intended scan path within said reservoir, said distal end extending past a distal end of the transducer and including a scan window through which ultrasound energy is transmitted and received, wherein said reservoir maintains a fluid tight seal around the transducer,
 - and a fluid coupling medium located within said reservoir.
2. The interface device of Claim 1, wherein the interface device is sterile.
3. The interface device of Claim 1, wherein said scan window is formed of a material with less than 1db/mm signal loss of transmitted and received high frequency ultrasound.
4. The interface device of Claim 1, wherein the scan window comprises a non-flowable hydrogel.
5. The interface device of Claim 1, wherein the scan window comprises a non-flowable hydrogel and a porous support structure.
6. The interface device of Claim 4, wherein the hydrogel comprises a crosslinked polymer with water content greater than or equal to 50% by weight.
7. The interface device of Claim 4, wherein the hydrogel comprises polyethylene oxide.
8. The interface device of Claim 4, wherein the hydrogel is formed from polyisocyanate terminated poly(alkylene ether) polyols.
9. The interface device of Claim 1, wherein the length of the device past the transducer is adjustable to allow adjustment of the position of the transducer focus.

10. The interface device of Claim 1, wherein the transducer focus is in the range of 2 to 6 mm past the distal the edge of the device.
- 5 11. The interface device of Claim 1, wherein the distal end of the device is curved to approximate the radius of the eye.
12. The interface device of Claim 1, wherein the reservoir comprises one or more separate pieces between which is disposed the hydrogel scan window.
- 10 13. The interface device of Claim 1, wherein the device incorporates delivery of acoustic coupling material.
14. The interface device of Claim 1, wherein the ultrasound frequency is in the range of 50 to
15 100 MHz.
15. The interface device of Claim 1, wherein the device incorporates access for surgical instruments.
- 20 16. The interface device of Claim 1, wherein the device incorporates a surgical instrument.
17. The interface device of Claim 1, wherein the device incorporates a surgical instrument that allows use of the instrument in positional relationship to the scanned image.
- 25 18. The interface device of Claim 2, wherein the device is sterilized by ionizing radiation.